Waste Site Cleanup
Advisory Committee Meeting

January 23, 2020

Agenda

Times are approximate

9:30 General program updates

9:50 MCP PFAS provisions and implementation

10:40 Status of other MCP amendments; discussion of the proposed modifications to the Exposure Point Concentration and waste deposit assessment provisions

11:30 Adjourn

MCP PFAS Provisions

Effective December 27, 2019

Units Conversion Reminder

(just in case)

WATER

(parts-per-million, ppm)	*(parts-per-billion, ppb)*	*(parts-per-trillion, ppt)*
1 mg/L	= 1,000 µg/L	= 1,000,000 ng/L
0.001 mg/L	= 1 µg/L	= 1,000 ng/L
0.000001 mg/L	= 0.001 µg/L	= 1 ng/L

SOIL

(parts-per-million, ppm)	*(parts-per-billion, ppb)*	*(parts-per-trillion, ppt)*
1 mg/kg	= 1,000 µg/kg	= 1,000,000 ng/kg
0.001 mg/kg	= 1 µg/kg (ppb)	= 1,000 ng/kg
0.000001 mg/kg	= 0.001 µg/kg	= 1 ng/kg

MCP PFAS Notification Criteria & Cleanup Standards

Reportable Concentrations (RCs) in Groundwater (310 CMR 40.1600)

- RCGW-1: triggers notification/action in areas protected for current or future use as drinking water source
  VALUES: Sum of 6 PFAS, 20 ng/L
- RCGW-2: triggers notification/action everywhere else
  VALUES: PFAS-specific, ranging from 500,000 – 40,000,000 ng/L

MCP PFAS Notification Criteria & Cleanup Standards (continued

Reportable Concentrations (RCs) in Soil
(310 CMR 40.1600)

- RCS-1: triggers notification/action near residences, schools, etc...
  VALUES: PFAS-specific, ranging from 300 - 2,000 ng/kg
- RCS-2: triggers notification/action everywhere else
  VALUES: PFAS-specific, each 400,000 ng/kg

MCP PFAS Notification Criteria & Cleanup Standards (continued)

- Method 1 Groundwater Standards (310 CMR 40.0974(2))
  - GW-1 (drinking water) 20 ng/L,
  - GW-2 (vapor intrusion) “NA”,
  - GW-3 (discharge to surface water) PFAS-specific, ranging from 0.5 – 40 mg/L

MCP PFAS Notification Criteria & Cleanup Standards (continued)

- Method 1 Soil Standards
  (310 CMR 40.0975(6)(a)-(c))

  – S-1, S-2 & S-3 (residential -> industrial/isolated)
  – Based on direct exposure to soil & background
  – PFAS-specific, ranging from 300 – 400,000 ng/kg

MCP PFAS Notification Criteria & Cleanup Standards (continued)

- Method 2 Soil Standards
  (310 CMR 40.0985(6))

  – S-1, S-2 & S-3 (residential -> industrial/isolated)
  – Based on direct exposure ONLY (leaching to groundwater must be specifically assessed)
  – PFAS-specific, ranging from 0.3 – 0.4 mg/kg

MCP PFAS Notification Criteria & Cleanup Standards (continued)

- Method 3 Upper Concentration Limits in Soil & Groundwater (310 CMR 40.0996(6))
  - UCL_{soil} – PFAS-specific, 4 mg/kg
  - $UCL_{groundwater}$ – PFAS-specific, ranging from 5 – 100 mg/L

MCP PFAS Notification Criteria & Cleanup Standards (continued)

- Specific Toxicity Values to use for PFAS in Method 3 Site-Specific Risk Assessments (310 CMR 40.09993(6))
  - Reference Dose (RfD): 5E-06 mg/kg/day

What *CHANGED* from Draft to Proposed Final Regulations

Soil Standards for soil above GW-1 groundwater (RCS-1; S-1/GW-1; S-2/GW-1; S-3/GW-1)	PROPOSED	FINAL
EXAMPLE: S-1/GW-1 Standard	200 ng/kg (as ∑6 PFAS)	300 ng/kg PFDA 500 ng/kg PFHpA 300 ng/kg PFHxS 320 ng/kg PFNA 2,000 ng/kg PFOS 720 ng/kg PFOA

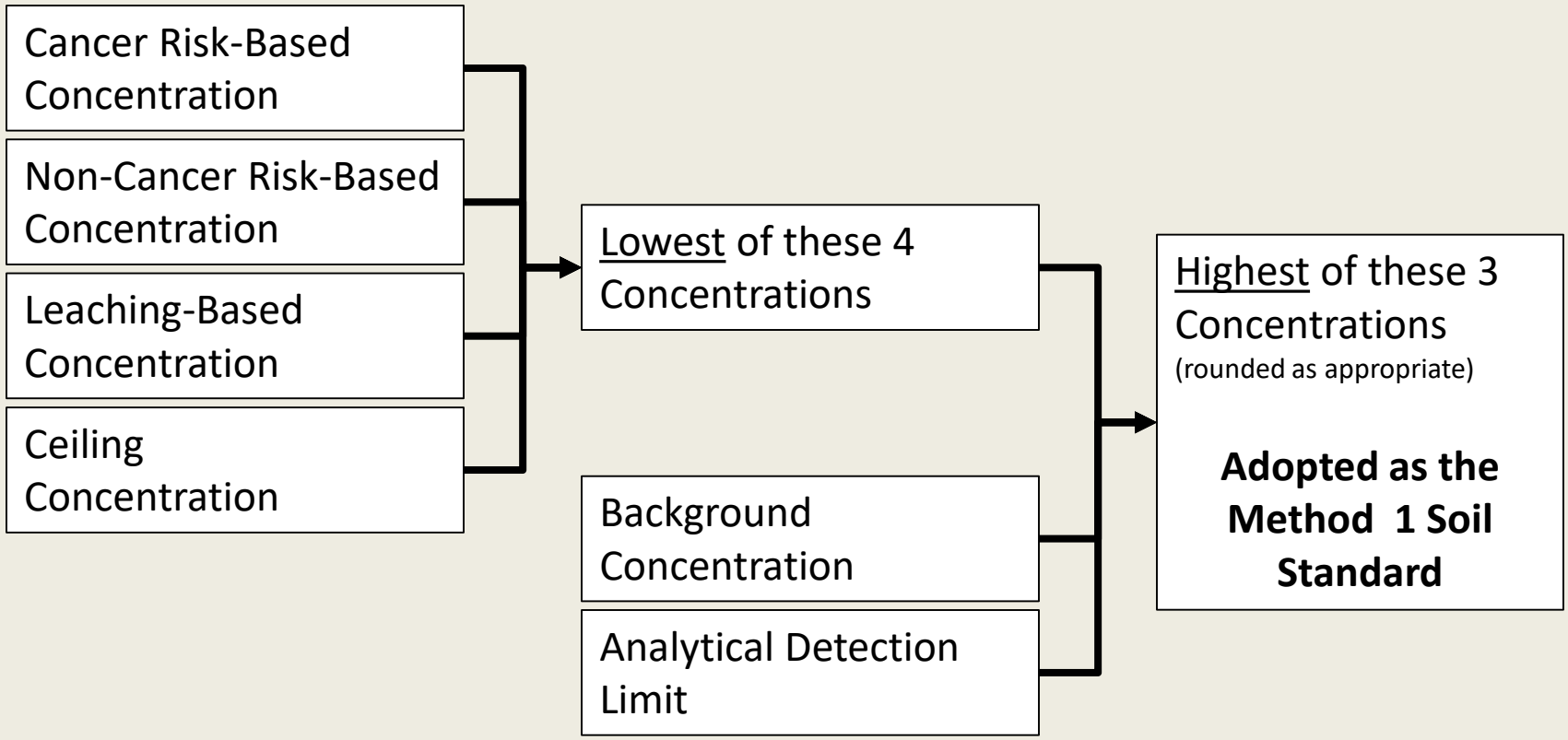
Change based on:

- New background soil data from Vermont & Barnstable became available

MCP Soil standards consider several factors, including human health risk, potential groundwater impacts (leaching), background levels and quantitation limits.
The final standards are measureable, and are protective for exposure through direct contact and use of the underlying groundwater.

Derivation of Method 1 Soil Standards

(See also https://youtu.be/RZM4BoiUsV0)



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Fact Sheet

Interim Guidance on Sampling and Analysis for PFAS at Disposal Sites Regulated under the Massachusetts Contingency Plan

June 19, 2018
Updated December 27, 2019

Introduction

This Fact Sheet, prepared by the Massachusetts Department of Environmental Protection (MassDEP) Bureau of Waste Site Cleanup (BWSC), provides guidance regarding when and how to sample and analyze for Per- and Polyfluoroalkyl Substances (together, PFAS) at disposal sites regulated under the Massachusetts Contingency Plan (MCP). MassDEP recommends a specific list of target PFAS analytes and discusses appropriate quantitative and qualitative risk characterization approaches. The Fact Sheet also summarizes physical and chemical properties, potential environmental health effects, and current state

https://www.mass.gov/doc/interim-guidance-on-sampling-and-analysis-for-pfas-at-disposal-sites-regulated-under-the/download

PFAS may be present at MCP sites as a result of current or past releases associated with the manufacturing, use, or disposal of products containing these chemicals. PFAS are considered hazardous

Other Considerations

- 2-Hour Notification (310 CMR 40.0311(6))
  Notification of releases measured in private well greater than RCGW-1 (20 ng/L for Σ6)

- Expectations when PFAS in soil exceeds S-1/GW-1
  - Greater than typical background levels
  - Concern for groundwater
  - Method 2 an option to specifically evaluate leaching threat
  - LOOK AT THE GROUNDWATER!

Other Considerations

- Method 3 Site-specific risk assessments must use MassDEP-listed Reference Dose, 5E-06 mg/kg/day, $\sqrt{10}$ more stringent than US EPA RfD

  see Technical Support Document at
  https://www.mass.gov/files/documents/2019/12/27/PFAS%20TSD%202019-12-26%20FINAL.pdf

Other Considerations

MassDEP Drinking Water Program has proposed an MCL of 20 ng/L for the Sum of 6 PFAS

https://www.mass.gov/info-details/per-and-polyfluoroalkyl-substances-pfas#development-of-a-pfas-drinking-water-standard-(mcl)-

- Public Hearings TODAY -> January 31, 2020
  (Including HERE tomorrow @ 10:00 am and LIVE on MassDEP's YouTube channel… Youtube.com/MassDEP)
- Comment Period closes February 28, 2020
- More than just the number! Applicability, sampling frequency, test methods, etc…
- Any resulting MCL changes would lead to revised MCP

Upcoming Activity

- 21E & Federal Site Work ongoing

- Supplemental Budget - Funds available for testing of Public & Private Water Supplies
  - Determine extent of PFAS in Mass. Groundwater
  - Working out logistics, contracting, etc…
  - Implications for source identification & site discovery
  - June 2021 deadline for project

EPC and Waste-Related MCP Revisions

BWSC Advisory Committee

January 23, 2020

Revision Process Recap

- Proposed revisions
- Public comments received
- Internal DEP policy deliberations
- Stakeholder meeting (11/14/19)
- Internal DEP policy deliberations
- MCP final revision plan

Revision Goals

- Incorporate recommendations to the extent possible.

- Revise the language in a way that still achieves the course corrections MassDEP originally intended.

Soil EPCs: Public Comments

General Issues – DEP should:

- Explain data set size justification.
- Consider “grandfathering” all sites that have been reported.
- Move the sampling-related provisions to Section 40.0830.
- Offer additional alternatives to the 90th percent nonparametric UCL.

Soil EPCs: Public Comments

With regard to identifying cases where more rigorous sampling and calculations apply:

- Eliminate size criterion.
- Allow more flexibility/professional judgment.
- Describe situations where more rigorous do apply, not just where they do not.

Mass DEP Concurrence with Public Comments

- The discussion of **data set size** could be placed in a more appropriate context
- The **size criterion** for identifying where more rigorous sampling/data analysis should be eliminated.
- Provisions for **alternative UCLs** could be simplified: 90% nonparametric Chebyshev UCL **or** technical justification.
- **Sampling approach** should be discussed in earlier sections of the MCP.
- **Add characteristics** of sites requiring more rigorous sampling.

Soil EPCs: Decisions/Resolutions*

MassDEP plans to:

- Eliminate the size criterion of 2000 ft^2 for sites that call for a UCL.
- Link the sampling approach more closely to the CSM and the known or expected nature, extent and distribution of contamination (in 40.0903).
- Reference existing sections of the MCP in calling for the technical justification of the data set used for the EPC.

**All "Decisions/Resolutions" represent current conceptual proposals that are subject to further internal review and approval. They are not proposed regulatory language.*

Systematic vs Judgmental Sampling
Section 40.0904 Concepts

Judgmental sampling is acceptable where a Systematic approach is not required, such as where contamination:

- originates from a known, discrete source or sources,
- is limited to a well-defined area, and
- is distributed in a predictable pattern consistent with the CSM.

Soil EPCs: Decisions/Resolutions Section 40.0904 Concepts

Systematic sampling approach is **required** in cases where:

- Contamination is not from a discrete source.
- Concentrations are not (or not expected to be) distributed in a predictable pattern.
- Concentrations are highly variable over small spatial scales.

Soil EPCs: Decisions/Resolutions – Revisions to 40.0926

- Where judgmental sampling is appropriate, the arithmetic mean is acceptable. . .
- Where systematic sampling is required, use one of the following two options:
  - The 90th percentile Chebyshev non-parametric UCL
  - a technical justification for the alternative is provided . . .

Subpart H Cross-reference at 40.0835(4)(g)

Exposure Assessment . . . **including justification for the sampling approach and the exposure point concentration calculation**, under current and reasonably foreseeable site conditions, **as described in 310 CMR 40.0900**

Provisions for Assessment and Management of Waste Deposits

Assessing Waste Deposits – Selected Public Comments

- "Areas of waste disposal" should be better defined.
- Types of waste covered should be clarified.
- Defining waste deposits as hotspots calls for a size criterion. Need to eliminate small spots and thin layers.
- Comparing waste concentrations to UCLs
  - presents analytical challenges and
  - will result in more engineered barriers and removal.

MassDEP Concurrence with Public Comments

- Types of waste included were not clearly defined.
- The proposed broad category included wastes that are best assessed differently.
- The proposal to identify waste deposits as hotspots raised questions about delineation.
- The proposal implied the need for chemical analysis of waste.

Waste Deposits: Decisions/Resolutions

MassDEP Plans to:

- Focus the revisions on coal tar, not a broader category of waste.
- Eliminate the designation of waste deposits as hotspots.
- Eliminate comparison of waste constituents to UCLs.
- For direct contact with waste, base the EPC on the known or estimated [OHM] in the coal tar itself.

Waste Deposits: Decisions/Resolutions

MassDEP Plans to:

- Define the presence of coal tar as a risk of harm to welfare and the environment.
- Create a coal tar subsection in 40.0994:
  - Connect significant risk with accessibility, consistent with treatment of other contaminants.
  - Retain the preference for engineered barriers.

Next WSCAC Meeting, Feb. 27th

- Additional discussion of final revisions to MCP proposals